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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,660	01/27/1999	WOLFGANG BECKER	PM265122	8310

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 10/17/2002

25

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/424,660

Applicant(s)

Becker et al

Examiner

Katherine A. Bareford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Sep 23, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14, 18-20, 24, 25, and 27-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers Claims 1-13, 15-17, 21-23, and 26 are canceled

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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Continued Prosecution Application

1. The Examiner notes that an amendment was filed on August 7, 2002, and a supplemental amendment was filed of Sept. 23, 2002. The supplemental, compliant, Sept. 23, 2002 amendment has been entered and considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The rejection of claims 14 and 22-24 under 35 U.S.C. 103(a) as being unpatentable over Japan 59-15141424 (hereinafter '424) has been withdrawn due to applicant's amendments.

4. Claims 14, 16, 20, 24 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 706 178 A2 (hereinafter '178) in view of Japan 59-151424 (hereinafter '424).

'178 teaches a method and apparatus for applying a layer of a viscous fluid onto a substrate. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. The viscous fluid (resin bonding material) is provided to a dosing arm (nozzle) positioned over the substrate.

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Column 11, line 40 through column 12, line 20 and figures 3A - 3C. A layer is formed on the substrate by dosing the substrate with fluid from the dosing arm. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. The substrate is rotated with a rotary drive. Column 11, lines 40-55 and figures 3A - 3C. The amount of fluid and rotation of the substrate is controlled. Column 11, lines 40-55. The fluid is a bonding material for bonding a second substrate to the first substrate. Column 11, lines 40-55. The second substrate is positioned over the layer of viscous fluid formed on the first substrate. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. Then the connected substrates are spun together to spin off excess fluid. Column 11, line 40 through column 12, line 20 and figures 3A - 3C.

Claim 20: the process makes optical storage disks. Column 5, lines 40-50.

Claim 24: the apparatus for applying the layer includes a dosing arm and a rotary drive that rotates the substrate. Column 11, lines 40-55 and figure 3A. A means to connect the first and second substrates is provided. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. A means to rotate the connected substrates is provided. Column 11, line 40 through column 12, line 20 and figures 3A - 3C.

'178 teaches all the features of these claims except the controller system for controlling the thickness of the viscous fluid on the substrate, the pump, and plate for holding the substrate.

However, '424 teaches a method and apparatus for applying a layer of a viscous fluid onto a planar substrate. Abstract and figure. The viscous fluid (resist) is provided to a dosing arm (nozzle 4) positioned over the substrate. Abstract and figure. A layer is formed on the substrate

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by dosing the substrate with fluid from the dosing arm. Abstract and figure. The substrate is rotated with a rotary drive. Abstract and figure. A thickness of the first layer formed on the first substrate is controlled by controlling the rotary speed of the rotary drive in response to the temperature of the viscous fluid. Abstract and figure.

Claim 24: the apparatus for applying the layer includes a dosing arm, a plate that supports the substrate, a rotary drive that rotates the plate and a controller. Abstract and figure. The controller controls the thickness by controlling the rotary speed of the rotary drive in response to the temperature of the viscous fluid. Abstract and figure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '178 to use the control system of '424 to control the thickness of the layer on the first substrate with an expectation of desirable results, because both references teach spin coating the substrate and '178 teaches a range of amounts of coating and rotation speeds of the substrate to be used and '424 teaches to control rotation speed and coating conditions to provide the desired coating thickness. It further would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '178 in view of '424 to use a dosing pump to supply the fluid to the dosing arm with an expectation of similar results, because '178 and '424 teach that fluid is supplied to the dosing arm during the process, and it is the Examiner's position that a dosing pump is a conventional method for supplying fluid to a dosing arm in the art of spin coating wafers.

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5. Claims 18, 19, 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over '178 in view of '424 as applied to claims 14, 16, 20, 24 and 27-28 above, and further in view of EP 595 749 A2 (hereinafter '749).

'178 in view of '424 teach all the features of these claims except the monitoring of the thickness of the layer and adjusting deviations of the thickness.

However, '749 teaches that when applying liquid resist to a wafer from a spray nozzle to form a thin film on the top surface of the wafer, it is conventionally known that the resist thickness resulting from the spin coating operation is dependent on the viscosity of the resist material and the spin speed. Page 2, line 55 through page 3, line 15. '749 further teaches to monitor the thickness applied liquid during the application and spinning process, so as to adjust to the desired thickness in situ. See page 3, lines 15-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '178 in view of '424 to provide in situ measurement of coating thickness as suggested by '749 with an expectation of better thickness control, because '178 in view of '424 teaches applying coating to a substrate to be spun with control of thickness and '749 teaches controlling thickness using in situ measurement of coating thickness to help control the final coating results. It further would have been obvious to select desired tolerances/deviations in the coating thickness (including the depth), so that when to make changes would be clear.

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Response to Arguments

6. Applicant's arguments filed Sept. 23, 2002 have been fully considered but they are not persuasive. .

Applicant's Arguments

First, applicant provides arguments as to the 35 USC 103 rejection using '424 alone. Then applicant provides arguments as to the 35 USC 103 rejection using '178 in view of '424. As to that rejection, applicant argues that '178 does not disclose a rotary drive that rotates the first substrate and rotary centrifugal drive that spins off excess viscous fluid between the first substrate and the second substrate as recited in claims 14 and 24. Applicant argues that '178 rotates both the first substrate at a low speed when the photopolymer resin is applied and the first and second substrates after the second substrate 5 is superposed on the first substrate 1. Applicant further asks the Examiner to cite references that clearly disclose or suggests a dosing pump and that lacquer and resist have similar properties or withdraw the rejection (noting that at page 7, lines 4-8 of the Office Action, the Examiner asserted that a dosing pump is a conventional method for supplying fluid to a dosing arm and that lacquer and resist have similar properties). Applicant further argues that '424 fails to cure the defects of '178. Applicant further argues that as to the further use of '749, '749 also fails to cure the defects of the combination of '178 and '424.

The Examiner's Response

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The Examiner has reviewed applicant's arguments, however, the above rejection is maintained. As to the 35 USC 103 rejection using '424 alone, the Examiner notes that this rejection has been withdrawn. As to the 35 USC 103 rejection using '178 in view of '424, the Examiner takes the position that rotation to the extent required by the claims is taught by '178. Independent claim 14, for example, requires forming a layer of fluid on the first substrate and "rotating the first substrate with a rotary drive". This is clearly shown in Figure 3A and column 11, lines 40-55. Then, the second substrate is positioned onto the first substrate with the first layer, and excess fluid is spun off with a rotary centrifugal drive. See column 11, line 55 through column 12, line 20 and figures 3B and 3C. A rotary centrifugal drive is clearly present to provide rotation of the substrate, since an apparatus must inherently be present to the extent required to perform the described rotation. It is unclear what applicant means by apparently arguing that the substrate is rotated at a low speed both times. The substrate is rotated at a low speed during application of the first liquid, then it is rotated at a high speed in the step demonstrated at step 3C, i.e. at "1000 to 5000 rpm" to provide uniform resin thickness. See column 12, lines 5-15. This speed clearly spins off excess fluid, as shown by Figure 3C (see droplets from the spinning).

As to the request for references as to the dosing arm and the lacquer, the Examiner notes that MPEP 2144.03 requires applicant to traverse this position by the Examiner for the Examiner to be required to provide references. In this case the applicant has not traversed the position of the Examiner as to the conventionality of using a dosing pump to supply fluid to a dosing arm. However, as a courtesy to applicant, the Examiner notes that Hasebe et al (US 5658615) (see

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pump 8g in figure 1 and column 4, lines 15-65) and Iwatsu et al (US 5127362) (see pump 8 in figure 1 and column 2, lines 30-55), both of which teach "dosing" pumps to provide controlled amounts of fluid to "dosing arms"/applicator nozzles. As to the lacquer, the Examiner notes that claim 23, which claimed the lacquer has been canceled, so that rejection is moot.

As to the argument that '424 fails to cure the defects of '178, the Examiner notes that as discussed above, '178 teaches the features as to the rotation. As to the argument that '749 also fails to cure the defects of the combination of '178 and '424 the Examiner notes that as discussed above, '178 teaches the features as to the rotation.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (703) 308-0078. The examiner can normally be reached on Monday-Thursday from 7:00 am to 4:30 pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck, can be reached on (703) 308-2333.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.


KATHERINE A. BAREFORD
PRIMARY EXAMINER
GROUP 1100-1750